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Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 9427 (1980, Reaffirmed 2009): Code of Practice for
Operation and Maintenance of Deionizing Columns. UDC
66.048.37.5 : 663.63 : 006.76



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

(Reaffirmed 2009)

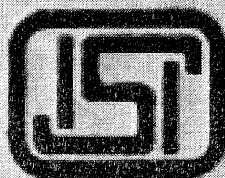
IS : 9427 - 1980

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Indian Standard

CODE OF PRACTICE FOR OPERATION AND MAINTENANCE OF DEIONIZING COLUMNS

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CODE OF PRACTICE FOR OPERATION AND MAINTENANCE OF DEIONIZING COLUMNS

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Indian Standard

CODE OF PRACTICE FOR OPERATION AND MAINTENANCE OF DEIONIZING COLUMNS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 31 January 1980, after the draft finalized by the Water Sectional Committee had been approved by the Chemical Division Council.

0.2 Deionizing columns are handy and economical wherever small quantities of distilled/deionized water are required. They work on the principle of ion exchange. Raw water is passed through the cation and anion exchange columns where it is demineralized and water equivalent to, or better than, distilled water is produced. Mobility of the plant is yet another advantage.

0.3 Ion exchange process is continuous and is interrupted only for periodic regeneration of the resins. Cation exchanger requires to be regenerated by means of hydrochloric acid (5 percent) or sulphuric acid (2 to 5 percent) and anion exchanger by sodium hydroxide solution (5 percent), depending upon calcium content of the water.

0.4 Water containing free chlorine not above 0.1 mg/l is recommended for the purpose of deionization.

1. SCOPE

1.1 This standard lays down the sequence of operations to be followed in the use of deionizing columns and prescribes the precautions to be taken in their operation and maintenance.

1.2 This standard applies to small scale laboratory size units and not to large scale industrial units.

2. TWO-BED DEIONIZERS

2.1 Regeneration

2.1.1 *Cation Exchanger*

2.1.1.1 Backwash the unit with raw water at the specified flow rate for the given length of time, as recommended by the supplier.

2.1.1.2 Regenerate the bed with the required quantity and concentration of the acid at the flow rate specified by the supplier.

2.1.1.3 Rinse the column with raw water at the specified flow rate for the given length of time.

2.1.2 *Anion Exchanger*

2.1.2.1 Backwash the bed with decationized water at the specified flow rate for the given length of time.

2.1.2.2 Regenerate the bed with the required quantity and concentration of the alkali at the flow rate specified by the supplier.

2.1.2.3 Rinse the column with decationized water at the specified flow rate for the given length of time.

2.2 Operation — Start operating the two-bed unit at the recommended flow rate till breakthrough is indicated on the conductivity meter (or by any other parameter).

3. MIXED BED DEIONIZERS

3.0 Normally these are used as polishing units and not in place of deionizing columns.

3.1 Regeneration

3.1.1 Backwash the unit with raw water at the specified flow rate for the given length of time and allow the two layers to separate.

3.1.2 Regenerate the two resins in the deionizer using the special device in the column as recommended by the supplier. Regeneration may also be done by taking them into two different columns, washing and then reintroducing them into the mixed bed deionizer.

3.1.3 Mix the cation and the anion exchangers thoroughly by air mixing.

3.1.4 Rinse the mixed bed with deionized water at the specified flow rate for the given length of time, as recommended by the supplier.

3.2 Operation — Start operating the mixed bed unit at the recommended flow rate till breakthrough is indicated on the conductivity meter (or by any other parameter).

4. PRECAUTIONS TO BE TAKEN IN THE OPERATION AND MAINTENANCE OF DEIONIZERS

4.1 Ion exchange beds shall never be allowed to dry. Locate the units away from sources of heat, such as boiler, furnace, etc.

4.2 Keep the bed in an exhausted and not in a regenerated condition if it is expected to remain out of use for some length of time.

4.3 Ensure that all valves are closed at the end of operation or regeneration if it is expected not to use the unit immediately.

4.4 Ensure that all fittings, tube connectors and conductivity meter attached to the unit are in proper working conditions.

(Continued from page 2)

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